

ABSTRACT OF THE DISCLOSURE

A system and method for efficiently searching long strings of data, such as network messages, is described. The system preferably includes an associative memory structure, having a plurality of content addressable memories (CAMs). The CAMs are hierarchically arranged such the output of at least one CAM is used as the input to a second CAM. Preferably, a top-level CAM receives only a selected portion of the data string or network message as its input. The output of the top-level CAM is then joined with some or all of the remaining portions of the data string to form a new output that is provided to the CAM at the next lower level. The top-level CAM is programmed such that its output is substantially smaller (e.g., has fewer bits) than the selected data string portion that is input to the top-level CAM. The system can thus search data strings that are on the whole far longer than the widths of the respective CAMs forming the memory structure.

15